

MICHIGAN AGRICULTURAL COLLEGE EXPERIMENT STATION

PRESS BULLETIN NO 48

To the Editor:

The notice below will be of value to many of your readers. We, therefore, ask you to cooperate with us in calling attention to this timely matter.

R. S. SHAW,
Director.

Recommendations for Spraying Grapes

The present high price of Copper Sulphate puts the question of the value of spraying squarely up to the grower. Years of successful trial prove that spraying pays, and that it is a necessary crop insurance. Last year, because of the extremely wet season, the canes were severely attacked by the Black Rot fungus, and many vineyards were neglected because the crop had been injured by frost. While the severity of Black Rot and other fungous diseases of the grape depends upon weather conditions, with vineyards that are in bad sanitary condition an outbreak of Black Rot or Red Grape (Downey Mildew) is sure if the season is wet. Accordingly we urge the growers not to risk their grape crop because of any false economy. It is the purpose of this article to outline a system for Michigan, which is the cheapest possible and still safe. The present high price of Copper Sulphate (Blue Vitriol) necessitates this readjustment of our recommendations in the use of this material as a spray to control Black Rot and other fungous diseases of the grape.

SPRAYS TO USE

Unfortunately there is no available substitute that we can recommend at this time to take the place of Bordeaux mixture for grapes. The sulphur sprays, Lime-sulphur, Self-boiled Lime-sulphur, etc., fail to control the fungous diseases of this fruit and furthermore burn the leaves, injure the young fruit, and lead to uneven ripening. Copperas (Iron Sulphate) and many other materials have been tested, but none have been found satisfactory.

It is being argued that commercial Bordeaux is cheaper than home-made Bordeaux this year. Analyses show that any seeming cheapness in the commercial product comes from its lower percentage of copper. In other words the cheapness comes from a decrease in the actual fungicidal substance, copper sulphate. Commercial Bordeaux, furthermore, lacks the qualities of a good spray. The precipitate settles rapidly and does not have the spreading or sticking qualities of home-made Bordeaux. Experience in the past has shown the superiority of the home-made product. The risks are too great for one to experiment with a weak solution.

Certain economies in the making of Bordeaux mixture are possible. The expense of Bordeaux spray may be greatly reduced by using the material at a strength weaker than the customary one; use 3 pounds of Copper Sulphate, and 2 pounds of lime (3 pounds of hydrated lime) to 50 gallons of water. This strength of Blue Vitriol has proven sufficient to control these diseases in the carefully performed spraying experiments of Hawkins at Paw Paw a few years ago.

We especially recommend that increased effort and care be expended in the thoroughness of its application. Growers should take care to cover every portion of the foliage and fruit. When used at the above strength, we believe that this spray is the cheapest available spray that is safe to use.

MAKING THE MIXTURE.

Extra care should be taken to insure a properly made Bordeaux mixture. If fifty gallons of the spray are to be made, 3 pounds of Copper Sulphate (Blue Vitriol) dissolved in about 3 gallons of water should be diluted with cold water to 25 gallons, and 2 pounds of fresh stone lime, properly slaked, (or 3 pounds

of hydrated lime) should be diluted to 25 gallons. Both should then be poured at the same time into the spray tank. This makes a mixture composed of extremely small particles which settle slowly and which spread and stick well. If concentrated lime and concentrated Blue Vitriol meet, one obtains a curdly, quick-settling Bordeaux, practically worthless for spraying. For more detailed directions about making the spray apply to this Experiment Station for the spray bulletin.

TIMES TO APPLY THE SPRAY.

The prevalence of grape rot the coming season will depend upon weather conditions. We may expect the disease to be severe in vineyards which were not thoroughly sprayed last year. Such vineyards should be sprayed at least four times, as follows:

- 1st. When the vines have grown 8 to 16 inches.
- 2nd. Just before blossoming (with 2 to 3 lbs. Arsenate of Lead added to 50 gallons of Bordeaux).
- 3rd. Just after blossoming (with 2 to 3 lbs. Arsenate of Lead added to 50 gallons of Bordeaux).
- 4th. A week or two later.

The customary fifth spraying may be omitted unless the weather shows wet spells which last a considerable time.

If the vineyard is in good sanitary condition, three sprayings may suffice, in which case the first spray should be omitted. The sprays applied just before and just after blossoming should have 2 to 3 pounds of Arsenate of Lead added for every 50 gallons, to poison the grape berry moth and the rose-chaffer.

APPLYING THE SPRAY.

In applying the Bordeaux the coming season, the grower should aim to spray with a fine, driving mist, as efficiency in disease control depends much upon securing good distribution on the foliage. The spray should be applied at as high a pressure as possible. The waste which comes from old, corroded nozzles must be done away with.

RETURNS FROM SPRAYING.

We believe that no grape grower can afford to neglect the application of these sprays as recommended. The benefits from their application come in the profits of the crop the following year as well as that of the present season. Spraying each year keeps the vineyard in good sanitary condition, and makes disease control easier.

SUMMARY.

1. We cannot recommend any substitute for home-made Bordeaux mixture to control the Black Rot of the grape.
2. We especially urge spraying this year, because the abundance of diseased spots on last year's canes will lead to an epidemic if the 1916 season is wet.
3. We recommend the use of a weaker copper spray than that commonly used, namely, one made with 3 pounds of Copper Sulphate, and 2 pounds of stone lime to 50 gallons of water.
4. We recommend at least four applications of this spray, two before blossoming and two after blossoming, for vineyards which are not in the best sanitary condition. For vineyards where the Black Rot was controlled last season, three sprayings may be sufficient.
5. Extra care should be used in the thoroughness of their application, to make the spray stick, and in preparing the spray.
6. No grower can afford to neglect these sprayings even at the present market price of Copper Sulphate.